

GOVERNMENT OF INDIA

METEOROLOGICAL DEPARTMENT

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INDIA WEATHER REVIEW, 1940

ANNUAL SUMMARY

PART B

STATISTICS DIVISION

SNOWFALL

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C. W. B. NORMAND, M.A., D.Sc., C.I.E.,

Director General of Observatories

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INDIA WEATHER REVIEW, 1940.

ANNUAL SUMMARY.

PART B.

SNOWFALL.

This part contains a summary of the reports of snowfall in the mountain regions to the north and northwest of India. These snowfall reports are collected by local officers from the local residents, headmen of villages, or from travellers who have passed through the region, and are then transmitted to this office.

The amount of snowfall is usually measured by finding the depth of undisturbed snow lying on the ground and is given in feet and inches. At places provided with rain gauges the snow collected in the gauge is melted and measured as rain; this is indicated in the text and the amounts are given in inches and cents of water.

Cold Weather Period, January and February.

I.—AFGHANISTAN.

Kabul.—No information is available for January. Snow fell on five days in February; fall of the 5th was reported to be heavy. All the passes and roads were closed. In Kabul proper snowfall was more than three feet deep. The peaks of Paghman and Hindu Kush ranges were only thinly covered at the end of the month. Both falls and accumulations were about normal.

II.—BALUCHISTAN.

Quetta.—Snow fell on seven days in January on the high peaks of Mardan, Chiltan and Takato hills to an aggregate depth of 6 to 7 inches. The first fall of the season occurred on the night of January 29 and 30 when 3" of snowfall was recorded at station proper. It caused a complete breakdown of telegraphic and telephonic communications between Quetta and the rest of India. The damage was reported to have been worst near Harnai and between Sariat and Hirok stations. In February the falls were continuous.

III.—NORTH-WEST FRONTIER PROVINCE.

(a) *Hazara.*—Snow fell on several days in both the months, and was below normal. Accumulations were below normal at the end of February. The snowline descended to a height of 4,500 ft. in January and to 4,000 ft. in February. The following table gives the approximate total depths of falls and accumulations during the period.

Locality.	January.		February.	
	Falls.	Accumulations.	Falls.	Accumulations.
	Ft.	Ft.	Ft.	Ft.
Phalkot . . .	17½	8	2½	5½
Thandiani . . .	14½	6	1½	4
Birangali . . .	5	1	¾	½
Dungagali . . .	6	4	13½	4
Kalabagh . . .	5½	4	13½	4
Narang . . .	15	7	10	4
Pludran . . .	11½	6½	8	3
Kagan . . .	9½	4	4½	1
Jared . . .	1	½	½	Nil.
Sundigali . . .	4½	2½	5	2½
Jachha . . .	3½	2½	4½	2½
Malkandi . . .	1½	0	1½	Nil.

(b) *Dir, Swat and Chitral.*—*Drosh.*—Frequent falls of snow occurred on the surrounding hills and at the station in January and only one in February. The snowline descended to an elevation of 6,000 ft. in the former and to 8,000 ft. in the latter month. The falls were below normal in both the months. At the end of the period the peaks of the surrounding hills were thinly covered with snow.

Malakand.—Ten snowstorms occurred in January and five in February, on the several ranges; the depths of the falls varied from 9" to 4 ft. in the former and 1 ft. to 2½ ft. in the latter month. Falls were below the average in both the months. The estimated accumulations at the end of each month were as follows:—

Locality.	January.	February.
	Ft.	Ft.
Lowarai	18	19
Bashkar	24	25
Hindu Raj	10	11
Mankyal	22	24
Ilam	8	9
Dwa Sarai	8	9

(c) *Khyber Agency.*—Snow fell only once in February to a depth of 1" to 3" on the plains and 5" to 6" on the surrounding hills of Landi Kotal.

(d) *Kohat.*—Snow fell on the surrounding high mountains and peaks to a depth of 2' 5½" in January and 1' 1½" in February. Falls and accumulations were above normal.

IV.—KASHMIR.

(a) *Skardu.*—The station and the surrounding mountains had snowfalls on five days in January and on one day in February. The snowline descended to a height of about 7,500 ft. during the period. Depths of accumulations on higher peaks at the ends of January and February were estimated to be about 6 ft. Accumulations at the end of the period were about normal.

(b) *Dras.*—Snow fell on six days in January and on eight days in February throughout the district. Falls were below normal during the period. The accumulations at the end of January and February were about 2 ft. and 1 ft. respectively at Dras and 4 ft. and 2½ to 3½ ft. respectively on the Zojilla pass. These were much below the normal.

(c) *Srinagar.*—Several light to moderate falls on the surrounding mountains were observed both in January and February. The heaviest fall of the season was experienced in January. It caused a serious dislocation of communications between Srinagar and Jammu. Both the telegraph and telephone systems of the State Government were damaged. Falls were slightly below normal during the period. Accumulations at the end of the period were normal.

(d) *Kargil.*—Slight snow fell in January. On the 1st February a heavy fall of snow occurred which held up the mail for several days. Falls and accumulations were below the average.

(e) *Sonamarg.*—Snow fell on three days in January and on four in February. Falls were below the normal in both the months. Accumulations of snow on the Zojilla and Nichaney passes amounted to about 8 ft. at the end of January and 3 to 4 ft. at the end of February. They were much below the average.

(f) *Leh.*—Two or three snowstorms occurred in each month. Snowline descended to 11,000 ft. in January and to 14,000 ft. in February. The falls were below normal in both the months. Accumulations of snow at the end of February were about 4 ft.

(g) *Muzaffarabad.*—Slight snow amounting to about 4" fell on the distant peaks, at the end of January. It was below the average. No snow fell in February.

V.—THE PANJAB.

(a) *Rawalpindi.*—Snow fell on five days in each of the months to a total depth of 21½" in January and 27½" in February. Heavy falls of snow in February in the vicinity of Murree dislocated traffic so much that mails from Rawalpindi to Srinagar were considerably delayed. The snowline during the period descended to a height of about 5,500 ft. Falls of the period as a whole were below the average.

(b) *Chamba.—Bhawal Range.*—Three snowstorms occurred in January and five in February. Falls and accumulations were below the average.

Tisa Range.—Six light snowstorms occurred in January. With the exception of one which descended down the whole valley, all were confined to high altitudes. February experienced 7 falls, out of which two that occurred on the 4th and 10th were very heavy and descended to a height of 3,500 ft. while the rest were confined to elevations of 6,500 ft. and above. Falls were below normal.

Bharmour Range.—Snow fell on three days in January and on six days in February to an aggregate depth of about 2 ft. in each month. The falls descended to a height of 6,000 ft. and were below the average. Peaks and passes were covered with snow at the end of the period.

(c) *Kulu (Kangra District).*—Snowfalls of average depths of 6 and 5 ft. respectively fell on the high peaks of the district in January and February. Fall of 8th February was heavy. Many houses in the villages collapsed and Palampur canal and springs were frozen. Snowline during the period descended to a height of about 6,000 ft. Falls were above the average in January, but below it in February. The estimated depths of accumulations at the end of each month are given in the following table:

Locality.	January.	February.
	Ft.	Ft.
Awaru	10	6
Sawai	8	4
Sangaru	7	3
Hampta	11	7
Rohtang	9	5
Bhabu	4	3
Bishleu	5	4
Jalori	4	3

The accumulations were much below normal at the end of February. In the Nagar area snowfall was experienced above a height of 5,000 ft. in January and February.

(d) *Kilba Hills (Simla District)*.—Light to heavy falls of snow were reported in January. The snowline descended down to 5,500 ft. In February ten falls of snow were experienced, the one on the 2nd was a bit heavy and descended down to 5,500 ft. Falls were below the normal during the period. All the well-known peaks and passes were closed to traffic during the two months and the accumulations at the end of each month were 15 ft. and 18 ft. respectively.

VI.—UNITED PROVINCES.

(a) *Almora*.—The following table gives the estimated amounts of falls and accumulations of snow for the two months.

Locality.	January.	February.
	Ft.	Ft.
<i>Falls.</i>		
Malla Danpur	15	4½
Malla Johar	6	20
Malla Darma	4½	3½
Chaudans	2½	7½
Byans . . . . .	..	7
<i>Accumulations.</i>		
Nandakhat	60	45
Sundar Dhunga	45	40
Pindari	50	60
Nuwe	21	45
Masurleg	11	16

Falls and accumulations were generally above the average.

(b) *Garhwal*.—There were four snowfalls in January and ten in February. The snowline descended (a height) 2,000 ft. during the period. There was widespread snowfall in February. Several passes were blocked by heavy snowfall and a caravan of mules was held up. The total depth of the falls varied from 1' to 10' in January and 1½' to 8' in February. The falls were normal in both the months. The accumulations of snow on the well-known and higher passes varied from 2" to 3½ ft. at the end of January. At the end of the period they measured 15 ft. and were normal.

(c) *Mukteswar*.—Snow fell on two days in January and on six in February aggregating to a depth of 9½" and 3 ft. respectively.

VII.—ASSAM.

(a) *Kamrup*.—No snow fell during the period.

(b) *Baliapara Frontier Tract*.—Very heavy falls of snow occurred on the well-known high passes above 10,000 ft. in February. Se La pass (about 14,200 ft.) was closed for traffic for more than three weeks, and Manda La, Jhuma La passes at about 10,000 ft. each were closed for traffic for about ten days, which is very unusual. There was 2 ft. of snow lying on the Jhum La and one foot on the Pankim La pass at the end of the season.

(c) *Sadiya Frontier Tract*.—No information is available except that mountain peaks north of Theroliang were covered with snow throughout the month of February.

Hot Weather Period, March to May.

I.—AFGHANISTAN.

Kabul.—Three snowstorms occurred in March, the last of which recorded a fall of 6½" and kept Lataband pass closed to traffic for two days. No snow fell in April and May. The falls of the period were normal. The snow accumulation on the Paghman and Hindu Kush ranges was only on the tops and in the crevices of the mountains; it being about 1½" on the Shibar pass 10,000 ft. high. Accumulations at the end of the period were normal.

II.—BALUCHISTAN.

Quetta.—Four light falls were reported in March and no snow fell in April and May.

III.—NORTH-WEST FRONTIER PROVINCE.

(a) *Hazara*.—Snow fell on several days in March on the inner hills and on a few days on the outer hills. Falls and accumulations for March are given below:

Locality.	Falls.	Accumulations.
	Ft.	Ft.
Narang	16½	6
Pludran	13½	5
Kagan	5½	½
Jared	½	½
Sundigali	3½	1½
Jachha	2½	1½
Phalkot	1½	3½
Thandiani	1	2½
Birangali	½	Nil
Dungagali	3½	2
Kalabagh	2½	2

The accumulations on the highest mountain ranges in the district were above normal at the end of May.

(b) *Dir, Swat and Chitral.*—*Drosh.*—There were three falls of snow in March and two in April on the surrounding hills. Thin accumulations were present above 8,000 ft. at the end of April. No snow fell in May and no accumulation of snow was present on the passes while the accumulations on the peaks were below normal.

Chitral.—No snow fell in May, but the accumulations of snow on passes and peaks at the end of the month were above normal.

Malakand.—Snowfall occurred on nine days in March and on four days in April, and was below normal. No snow fell in May. Accumulations at the end of each month are given below. These were about normal at the end of the period.

Locality.	March.	April.	May.
	Ft.	Ft.	Ft.
Lowarai	16	9	1½
Bashkar	23	17	13
Hindu Raj	9	15	..
Mankyal	21	11	14
Ilam	8	..	..
Dwa Sarai	8	3	..
Shuklai . . . . .	..	1	..

(c) *Khyber Agency.*—There was no snowfall during the period nor was there any accumulation of snow on the hills and high peaks surrounding the area of Landi Kotal and Khyber by the end of May.

(d) *Kurram.*—No reports are available for March and April. There was no snowfall in May and accumulations at the end of the period were below normal.

(e) *Kohat.*—Fort Lockhart had 3" of snowfall in March and about ½" in April. No snow fell in May.

(f) *North Waziristan.*—Snowfall during the period was reported to be normal and accumulations on the highest peaks of Shuidar and Pirghal at the end of May were normal.

(g) *South Waziristan.*—No reports were received for March and April and no snow fell in May. At the end of the period accumulations on Preghal and Narai ranges were about normal.

IV.—KASHMIR.

(a) *Skardu.*—Snow fell on the surrounding mountains on four, five and seven days in March, April and May respectively. The snowline descended to 10,000 ft. in March and to 12,000 ft. in April and May. Accumulations at the ends of the three months on the higher passes were about 6', 5' and 3' respectively. They were below normal.

(b) *Dras.*—Snow fell on 13 days in March and on 7 days in April. During May snowfall occurred on four days on

the ground and on eight days on the surrounding hills and mountains. Falls on the 19th and 20th were reported to be heavy. On the whole the falls were normal in March and April, and above normal in May. Accumulations at the end of each of the months are given below. They were normal.

Locality.	March.	April.	May.
	Ft.	Ft.	Ft.
Zojilla pass	10	5	3
Dras	4	..	..
High mountains of Dras .	6	..	..
High mountains of Kanhal, Talloin, Mushkoo and Ogam Chan.	..	2½	..
High peaks . . . . .	..	..	1½

(c) *Srinagar.*—Several light to moderate falls of snow occurred on the surrounding mountains during March and April, and a few scattered falls on the higher peaks of the surrounding mountains in May. Both the falls and accumulations were below normal.

(d) *Gulmarg.*—No information is available for March and April. During May several light falls were reported. Snow existed at the end of the period as a thin layer only on the surrounding mountains. Accumulations at the end of the period were below normal.

(e) *Kargil.*—Snow fell at the station on several days in March, aggregating to just over an inch. In April slight falls were reported on the surrounding hills. Very heavy snow fell on two days in May which was reported to be quite unusual for the month. The accumulations were below normal at the end of the period.

(f) *Sonamarg.*—Snowfall occurred on eight days in March, on two days in April and on one day in May. The accumulations of snow on the ground at Sonamarg and on the Zojilla and Nichaney passes were as shown below at the end of each of the three months.

Locality.	March.	April.	May.
	Ft.	Ft.	Ft.
Sonamarg (ground) . . .	4	Nil	Nil
Passes	6	2½	2

These were below the average at the end of the period.

(g) *Gurez.*—Snow fell on the 19th of May; the accumulations at the end of the month on the surrounding mountains were about 1½ ft.

(h) *Leh.*—There were slight falls in March, two falls of average intensity in April and several light falls in May, the snowline descending to 13,000 ft., 11,000 ft. and 11,000 ft. respectively. The falls were slightly below normal in

March and April and normal in May. The accumulations at the ends of the three months were 4, 3, and 3 ft. respectively on the well-known passes and these were below normal.

(i) *Muzaffarabad*.—There was no snowfall during the period.

V.—THE PUNJAB.

(a) *Rawalpindi*.—Snow fell once only in March to a depth of 2 inches. The fall was confined to the neighbouring peaks. Snowfall for the season as a whole was below normal and there was no accumulation of snow at the end of the period.

(b) *Chamba*.—In March snowstorms occurred on two occasions to a depth of 3" and 6" on the Bharmaur range and on four occasions on the Bhandal range. The snowline descended down to 7,000 ft. and 9,000 ft. in the respective ranges. During May there were falls on seven days in the Chamba state on places above a height of 9,000 ft. The accumulations at the end of May on the well-known passes and peaks were about 10 ft. which is reported to be much below normal.

(c) *Kangra*.—Snowfalls to an average depth of 3', 1' and $\frac{1}{2}'$ occurred in the respective months on the high ranges of the Himalaya mountains in the Kangra and Palampur tahsils and Kulu subdivisions. The falls were above normal for the period as a whole. The accumulations at the end of each month are given below. They were considerably below normal at the end of May.

Locality.	March.	April.	May.
	Ft.	Ft.	Ft.
High ranges of the Himalaya mountains.	7	5	2
Sawai	2	2	..
Sangaru	2	2	..
Awaru	2	2	..
Hampta	6	6	5
Rohtang	5	5	4
Bhabu	2	2	..
Bishleu	3	3	..
Jalori	2	2	..

(d) *Kilba*.—Eight light snowfalls descending up to 7,500 ft. in March, five in April and a few light falls only on the high peaks in May were reported. The falls of the first two months were below normal and those in May were slightly above the average. All the passes were closed to

foot traffic in March and April. Snowfall of the season on the whole is said to be below average.

VI.—UNITED PROVINCES.

(a) *Almora*.—Snowfall and accumulations are entered in the table below. Falls and accumulations were both above normal throughout the period.

Locality.	March.	April.	May.
	Ft.	Ft.	Ft.
<i>Falls.</i>			
Byans	2	..	5
Chaudans	8 $\frac{1}{2}$	1 $\frac{1}{2}$	1
Malla Danpur	3 $\frac{1}{2}$	2	2
Malla Darma	13	4 $\frac{1}{2}$	3 $\frac{1}{2}$
Malla Johar	15	..	$\frac{1}{2}$
<i>Accumulations</i>			
Masurleg	16	12	10
Lipulekh	23	..	10
Sundar Dhunga	20	25	25
Nandakhat	35	25	25
Pindari	50	40	15
Nuwe . . . . .	..	25	18
Lampia . . . . .	..	..	15

(b) *Garhwal*.—Snowfalls on twentytwo and ten occasions occurred in March, and April respectively, the depth varying from $\frac{1}{2}$ " to 4' in March and 6" to 1' in April. The snowline descended to 6,000 ft. in March and to 12,000 ft. in April. In May snow fell to a depth of 2' above 12,000 ft. height. Falls were above normal in all the months. Accumulations at the end of May measured about 5 ft. on the passes and 12 ft. on peaks. These were normal for the period.

(c) *Naini Tal*.—Only for March a report was received and it indicates snowfall at Mukteswar to a depth of about 4".

VII.—ASSAM.

Sadiya Frontier Tract.—Snowfall is reported to have occurred in the middle of March on the Abor Hills. The mountain peaks north of Theroliang were covered with snow throughout the month of March. These were reported to be above normal for the period.

VIII.—TIBET.

Gyantse.—Snow fell in March, the depth being equivalent to 0.82" of rain.

South-West Monsoon Period, June to September.

JUNE AND JULY.

I.—AFGHANISTAN.

Kabul.—No falls were recorded on any of the mountain ranges of Afghanistan during the period. The snow had cleared up from Paghman and Hindu Kush ranges. No snow existed on the high mountains of Shibar. Accumulations were normal.

II.—NORTH-WEST FRONTIER PROVINCE.

(a) *Hazara.*—Falls were observed on mountains and passes above 10,000 ft. M.S.L. Approximate depths of falls during the period and accumulations at the end of July are given in the following table.

Peaks.	Falls during the period.	Accumulations at the end of the period.
	In.	Ft.
Kachb	5½	7½
Mahli Burawai	4	5½
Khopra	3½	6
Raji Bhogi	3½	5½
Kuropass	3	6½
Mahli Battal	2½	5
Sarool	2	6
Bajitar	3½	6½
Shah Kharan	3½	5½
Jamgarh	2	5
Musselamuse	2	6½
Mulki	2	2
Makra	2	2

Accumulations at the end of the period were above normal.

(b) *Dir, Swat and Chitral.*—*Drosh*: No snowfall occurred during the period at Drosh. There were also no accumulations on the ranges and passes at the end of the period.

Chitral.—No snow fell during the period. Accumulations still existed on high passes and peaks and were thicker than usual.

Malakand.—No snow fell during the period. Accumulations at the ends of June and also of July are given below.

Locality.	June.	July.
	Ft.	Ft.
Mankyal	9	7
Bashkar	7	6
Lowarai	½	...

(c) *Khyber Agency.*—No snow fell during the months of June and July. Depths of accumulations on the high peaks of Morga Hill were estimated to be about 3½ ft. at the end of the period.

(d) *Kurram.*—No snowfall occurred during the period either in the agency or on the adjacent hills. Accumulations of snow at the end of the period on well-known passes and peaks were as follows and were normal.

Sikaram peak	3'
Badina peak	2'
Zeran pass }	only trace.
Sikaram pass }	

(e) *South Waziristan.*—No falls were reported during the period; no accumulations of snow on the mountain ranges and passes of the agency existed at the end of the period.

III.—KASHMIR.

(a) *Skardu.*—Snowstorms occurred on the high surrounding mountains on four days during the period to the depths of 3 to 6 inches. Snowline descended to 12,000 ft. Depths of accumulations on the higher passes at the ends of June and July measured about two feet and one foot respectively. These were about normal.

(b) *Dras.*—Snow fell on the first three days of June only during the entire period. No accumulation existed at the end of the season. This was normal.

(c) *Srinagar.*—A few light falls of snow were observed on the surrounding peaks during the first fortnight of June. Snow accumulations of the previous winter existed on the surrounding high mountains at the end of the month. No snow fell on the surrounding high mountains during July and no accumulations existed on the surrounding mountains at the end of the period. The falls of the period were below normal.

(d) *Gulmarg.*—Several light to moderate falls of snow were observed especially on the Affarwat range in June while only one light fall was observed on the Handibal range in July. Falls and accumulations of the period were below normal.

(e) *Kargil, Sonamarg, Leh and Muzaffarabad.*—No falls were recorded at any of these stations during the period.

IV.—THE PUNJAB.

(a) *Chamba.*—No snow fell during the period. Accumulations on high passes were much below normal.

(b) *Kangra.*—There was practically no snowfall in the district during the period. Kulu, however, reported a few falls above 14,000 ft. Accumulations at the end of the period were below normal.

(c) *Kilba Hills.*—Snow fell in both the months, the heaviest fall having been recorded in the first week of June. The falls of the period were below normal. All the passes were open to traffic during the season.

V.—UNITED PROVINCES.

(a) *Almora*.—The following table gives the aggregate falls and accumulations of snow on the well-known peaks and passes about Almora at the ends of June and July.

Locality.	June.	July.
	Ft.	Ft.
<i>Falls.</i>		
Malla Johar	$\frac{1}{2}$	..
Chaudans	$1\frac{1}{2}$	$\frac{1}{2}$
Malla Danpur	$1\frac{1}{2}$	1
Malla Darma	$3\frac{1}{2}$	$5\frac{1}{2}$
Byans	5	2
<i>Accumulations.</i>		
Lampia	6	6
Masurleg	8	$7\frac{1}{2}$
Nuwe	10	7
Sundar Dhunga	15	..
Nanda Khat	20	..
Pindar . . . . .	..	5
Lipu . . . . .	..	4

Falls and accumulations were below the average.

(b) *Garhwal*.—There was no snowfall during the period. Accumulations were normal.

AUGUST AND SEPTEMBER.

I.—NORTH-WEST FRONTIER PROVINCE.

(a) *Dir, Swat and Chitral*.—*Drosh*: No snowfall occurred at the station on the surrounding hills. Two light falls were however observed on Lowarai, and Madaglasht peaks in September. No accumulations of snow were present on the well-known passes at the end of the season.

Malakand.—There was no snowfall during the period. The depths of accumulations on the well-known passes and peaks are given below:

Locality.	August.	September.
	Ft.	Ft.
Bashkar	5	3
Mankyal	6	4

II.—KASHMIR.

(a) *Skardu*.—Snow fell on five days in August and on three days in September, on the high surrounding mountains. Snowline descended to 12,000 ft. in August and to 10,000 ft. in September. The falls of the period were normal.

(b) *Dras*.—No snowfall was observed during August while seven falls were recorded in September. Accumula-

tions of snow on the high tops of the mountains were estimated to be about 6". There was no snow on the Zojilla pass throughout the period.

(c) *Srinagar*.—A few light falls of snow in August and several light to moderate falls in September were observed on the surrounding high mountains. The falls were about the normal for the season. A thick layer of fresh snow existed on the surrounding high mountains at the end of the period.

(d) *Gulmarg*.—A light fall of snow was observed on the Handibal and Affarwat ranges in August. In September several light to moderate falls were recorded on the surrounding mountains. Falls were below normal in both the months. Accumulations at the end of the season were normal.

(e) *Kargil*.—Traces of snow were visible on the surrounding peaks on one day in August and on four days in September. Falls and accumulations were below the average.

(f) *Sonamarg*.—No snow fell in August. In September snow fell on more than four occasions on the surrounding hills and Zojilla pass experienced heavy snowstorms. The falls were above normal at the end of the season and Zojilla pass was covered with about one foot of snow.

(g) *Leh*.—Several snowstorms on summits of high hills in the neighbourhood were recorded during September. No accumulations existed at the end of the period.

(h) *Muzaffarabad*.—No snow fell in August, and reports for September are not available.

III.—THE PUNJAB.

Kilba.—Snow fell in both the months but was below the average. The snowline descended to 10,000 ft. in September.

IV.—UNITED PROVINCES.

(a) *Almora*.—Snowfalls and accumulations are given below.

Locality.	August.	September.
	Ft.	Ft.
<i>Falls.</i>		
Malla Danpur	1	2
Byans	$3\frac{1}{2}$	$7\frac{1}{2}$
Malla Darma	$6\frac{1}{2}$	$10\frac{1}{2}$
Chaudans	$4\frac{1}{2}$	$1\frac{1}{2}$
Malla Johar	$\frac{1}{2}$	$\frac{1}{2}$
<i>Accumulations.</i>		
Pindari	6	7
Lipu	4	14
Lampia	6	..
Masurleg	7	$10\frac{1}{2}$
Nuwe	8	14
Bankatiya	12	14
Nanda Khat	20	22
Sundarghati	20	..
Sundar Dhunga . . . . .	..	22

Accumulations at the end of the period were above normal.

(b) *Garhwal*.—Snow fell on one day in August and on eleven days in September on well-known higher peaks. The falls were above the average in both the months. Accumulations on the higher passes were normal.

The Retreating Monsoon Period, October to December.

I.—AFGHANISTAN.

Kabul.—Slight falls of snow occurred on the peaks of Paghman and Hindu Kush hills on seven days in October, on one day in November and on two days in December. In the Kabul valley there was snow on two days in December. Passes were open to traffic and there was about 8" of snow on the Shibar Pass at the end of the month. Falls and accumulations at the end of the period were above the average.

II.—NORTH-WEST FRONTIER PROVINCE.

(a) *Hazara.*—No reports were received for October and November. Falls and accumulations for December are given below.

December.

Locality.	Falls.	Accumulations.
	Ft.	Ft.
Phalkot	1½	1½
Thandiani	1	1
Birangali	½	½
Dungagali	1½	½
Kalabagh	1½	½
Narang	5	2
Pludran	4	1½
Kagan	2½	½
Jared	½	..
Sundigali	2½	½
Jachha	3	½

Both the falls and accumulations were below normal.

(b) *Dir, Swat and Chitral.*—*Drosh*: Mild falls occurred on the Lowarai and Madaglasht peaks and on the peaks of the surrounding hills on four days each in October and November and on five days in December. Snow existed on the peaks of Lowarai and Madaglasht hills at the end of the season. Depth of accumulation on the Lowarai Pass was estimated at 3 ft.

Malakand.—Snow fell on four days in October, on one day in November and on six days in December to a total depth of 1½', ¼' and 15½' respectively. The falls were below normal throughout the period. The accumulations at the end of each of the months are given in the following table.

Locality.	October.	November.	December.
	Ft.	Ft.	Ft.
Bashkar	1½	1	9
Mankyal	2½	1½	10
Lowarai . . . . .	..	..	6
Ilam Dwasarai . . . . .	..	..	3
Hindu Raj . . . . .	..	..	5

(c) *Kurram.*—No snow fell at Parachinar and on the adjacent hills in November and in the first half of December. Snow however fell on the Safed Koh Peaks on three days in December, snow was still present at the end of the period.

(d) *South Waziristan.*—In South Waziristan light falls occurred at elevations between 6,000 and 11,000 ft. in December.

III.—KASHMIR.

(a) *Skardu.*—No snow fell at the station. Three light falls occurred on the surrounding mountains in December when the snowline is said to have descended to about 11,000 ft. Accumulations of about 2½ ft. thick lay on the peaks of the surrounding mountains at the end of the season, and were slightly below normal.

(b) *Dras.*—Snow fell on the surrounding mountains on three days each in October and December and on two days in November. The falls were below normal for the period. Accumulations of snow on the Zojilla Pass at the end of the period were much below normal and were estimated at two feet deep.

(c) *Srinagar.*—Several light to moderate falls of snow were observed on the surrounding mountains in each of the months. Light snow fell at the station on 10th and 11th December. Falls and accumulations were below normal during the period.

(d) *Kargil.*—Traces of snow were observed on two days in October and on one day in November. On 25th December snow fell to a depth of one inch at the station and four inches on the peaks of the surrounding mountains. For the season as a whole falls were normal.

(e) *Sonamarg.*—Falls were observed on the mountains on three days each in October and November and on six days in December. One fall each of October and November and all the six of December descended as low as the valley. Falls were below normal for the period as a whole. At the end of the season 1½ ft. of snow lay at the station.

(f) *Leh.*—No snow fell in October. There was one snow-storm in November and two light falls in December. Falls were normal throughout the period. Accumulations of snow on the high passes at the end of the period were estimated at 3 ft.

(g) *Muzaffarabad.*—No reports were received for October and November. No snow fell in December.

IV.—THE PUNJAB.

(a) *Chamba.*—No reports were received for October. In November three falls were reported on the Pangri range, two of them being very mild. During December seven falls on each of the two ranges Pangri and Chamba, three on the Bharmaur range, four on the Bhandal range and six on the Tissa range were reported. Falls and accumulations were below normal generally.

(b) *Kulu (Kangra District).*—No snow fell in October and November. In the first half of December two heavy falls were reported. The falls were confined to an altitude of 6,000 ft. in Kulu Tahsil and 6,800 ft. in Seraj. The depths of accumulations at the end of the period were estimated at 6 ft. on the Hampta pass, 5 ft. on Rohtang pass, and 4 ft. on the Siri Khand pass. These were normal for the period of the year. Bashleo and Jalori passes were open to traffic.

(c) *Kilba (Simla District).*—One fall each was reported in the months of October and November. Snowline during the months descended to 13,000 ft. and 8,800 ft. respectively. Of the four falls in December, two were heavy. Snowline descended to 6,500 ft. Falls during the period were below the average. All passes were closed for traffic by the end of November.

V.—UNITED PROVINCES.

(a) *Almora.*—Snowfall of the period was above the average. The total amounts of the falls and the accumulations as estimated by the Patwaris are given below.

Locality.	October.	November.	December.
	Ft.	Ft.	Ft.
<i>Falls.</i>			
Malla Danpur	2½	2½	3
Malla Johar	4	5	..
Byans	3	5	2
Chaudans	1½	2	..
Malla Darma	½	2½	5

Summary.

Cold Weather Period, January and February.—The falls and accumulations were slightly above the average in the United Provinces, normal in Afghanistan and generally below normal in the North-West Frontier Province, Kashmir and the Punjab.

Hot Weather Period, March to May.—Snowfalls were generally normal except in the United Provinces where they were above the average. The accumulations at the end of May were slightly above the average in the United Provinces, normal in Afghanistan and the North-West Frontier Province and below normal in Kashmir, the Punjab and Assam.

South-West Monsoon Period, June and July.—Snowfalls were below normal in Kashmir, the Punjab and the United

Accumulations.

Locality.	October.	November.	December.
	Ft.	Ft.	Ft.
Pindari (Valley) . . .	12	12	20
Nanda Khet	25	25	30
Sundar Dhunga . . .	25	15	35
Bankatia	15	15	25
Lipu	9	10	..
Lampia	13½	15	13½
Masurleg	8½	8	..
Nuwe	16	14	25

Accumulations continued to be above normal during the period.

(b) *Garhwal.*—There were three falls in October and two each in November and December. Falls were below normal during the period. Snowfall descended to 4,500 ft. during December. Accumulations on the well-known passes were normal up to the end of November.

VI.—ASSAM.

(a) *Kamrup.*—Both the snowfall and the accumulations during the period were normal.

(b) *Sadiya Frontier Tract.*—Towards the end of December heavy falls of snow were observed on the peaks of the Upper Abor Hills. Snow was also seen on the peaks near Denning and north of Therobong. Falls were normal in the Abor Hills but above the average on the peaks near Denning.

(c) *Baliapara Frontier Tract.*—In the months of November and December two falls of snow 2 to 3 ft. deep were reported on the peaks of the Se La and Me La Hills. Light snowfalls also occurred on the lower passes, Manda La, Jhum La, Peri La and Pan Kim La. Falls were normal.

Provinces. The accumulations were above normal in the North-West Frontier Province, normal in Afghanistan, slightly below the average in the United Provinces and Kashmir, and below normal in the Punjab.

South-West Monsoon Period, August and September.—The falls and accumulations were above the average in the United Provinces and slightly below normal in Kashmir and the Punjab.

The Retreating Monsoon Period, October to December.—The falls and accumulations were above the average in Afghanistan, normal in Assam and below normal in the North-West Frontier Province, Kashmir and the Punjab. The falls were normal in the United Provinces, the accumulations being slightly above the average.